






SPECIFICATIONS

CUSTOMER : _____
MODEL NO. : **GFTO080AA1024600-V**
VERSION : **A**
DATE : **2017.12.27**
CERTIFICATION : **ROHS**
CUSTOMER SIGN : _____

QA Approved By	Approved By	Prepared By	Prepared By
			

晶發科技股份有限公司
GI FAR TECHNOLOGY CO.,LTD

新北市樹林區東豐街 81 號

No. 81, Dongfeng St, Shulin District, 23874, New Taipei City, Taiwan, R.O.C.

TEL: +886-2-8684-1188 FAX: +886-2-8684-8532



Revision Record

Data(y/m/d)	Ver.	Description	Note	page
2017.12.27	A	NEW		



Contents

1. General Specifications.....	4
2. Pin Assignment	5
2.1. TFT LCD Panel Driving Section	5
3. Operation Specifications.....	8
3.1. Absolute Maximum Ratings	8
3.1.1. Typical Operation Conditions.....	9
3.1.2. Current Consumption	10
3.1.3. Backlight Driving Conditions.....	10
3.2. Power Sequence	11
3.3. Timing Characteristics	12
3.3.1. AC Electrical Characteristics	12
3.3.2. Input Clock and Data Timing Diagram	12
3.3.3. DC Electrical Characteristics	13
3.3.4. Timing	14
3.3.5. Data Input Format.....	14
4. Optical Specifications.....	15
5. Reliability Test Items.....	19
6. General Precautions.....	20
6.1. Safety	20
6.2. Handling	20
6.3. Static Electricity	20
6.4. Storage	20
6.5. Cleaning	20
6.6. Quality warranty period.....	20
7. Mechanical Drawing.....	21
8. Package Drawing	22
8.1 Package Material Table	22
8.2 Packaging Quantity	22
8.3 Packaging Drawing.....	23



1. General Specifications

Item	Specification	Remark
LCD size	8.0 inch(Diagonal)	
Driver element	a-Si TFT active matrix	
Resolution	1024 × 3(RGB) × 600	
Display mode	Normally White	
Dot pitch	0.0575(W) X 0.1656(H) mm	
Active area	176.64(W) X 99.36(H) mm	
Module size	192.8(W) X 116.9(H) X 6.4(D) mm	Note 1
Surface treatment	Plain	
Color arrangement	RGB-stripe	
View Direction (Gray Inversion)	6:00 O' Clock	
Interface	Digital	
Backlight power onsumption	3.35 W (Typ.)	
Panel power consumption	0.392W (Typ.)	
Weight	0.234kg (Typ.)	

Note 1: Refer to Mechanical Drawing.



2. Pin Assignment

2.1. TFT LCD Panel Driving Section

FPC Connector is used for the module electronics interface. The recommended model is FH12A-40S-0.5SH manufactured by Hirose.

Pin No.	Symbol	I/O	Function	Remark
1	VCOM	P	Common voltage	
2	VDD	P	Power Voltage for digital circuit	
3	VDD	P	Power Voltage for digital circuit	
4	NC	-	No connection	
5	RESET	I	Global reset pin.	
6	STBYB	I	Standby mode, Normally pulled high STBYB = "1", normal operation STBYB = "0", timing controller, source driver will turn off, all output are High-Z	
7	GND	P	Ground	
8	RXIN0-	I	- LVDS differential data input	
9	RXIN0+	I	+ LVDS differential data input	
10	GND	P	Ground	
11	RXIN1-	I	- LVDS differential data input	
12	RXIN1+	I	+ LVDS differential data input	
13	GND	P	Ground	
14	RXIN2-	I	- LVDS differential data input	
15	RXIN2+	I	+ LVDS differential data input	
16	GND	P	Ground	
17	RXCLKIN-	I	- LVDS differential data input	
18	RXCLKIN+	I	+ LVDS differential data input	
19	GND	P	Ground	
20	RXIN3-	I	- LVDS differential data input	
21	RXIN3+	I	+ LVDS differential data input	
22	GND	P	Ground	
23	NC	-	No connection	
24	NC	-	No connection	



25	GND	P	Ground	
26	NC	-	No connection	
27	DIMO	O	Backlight CABC controller signal output	
28	SELB	I	6bit/8bit mode select	Note1
29	AVDD	P	Power for Analog Circuit	
30	GND	P	Ground	
31	LED-	P	LED Cathode	
32	LED-	P	LED Cathode	
33	L/R	I	Horizontal inversion	Note3
34	U/D	I	Vertical inversion	Note3
35	VGL	P	Gate OFF Voltage	
36	CABCEN1	I	CABC H/W enable	Note2
37	CABCEN0	I	CABC H/W enable	Note2
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

I: input, O: output, P: Power

Note1: If LVDS input data is 6 bits ,SELB must be set to High;

If LVDS input data is 8 bits ,SELB must be set to Low.

Note2: When CABC_EN="00", CABC OFF.

When CABC_EN="01", user interface image.

When CABC_EN="10", still picture.

When CABC_EN="11", moving image.

When CABC off, don't connect DIMO, else connect it to backlight.

Note3: When L/R="0", set right to left scan direction.

When L/R="1", set left to right scan direction.

When U/D="0", set top to bottom scan direction.

When U/D="1", set bottom to top scan direction.

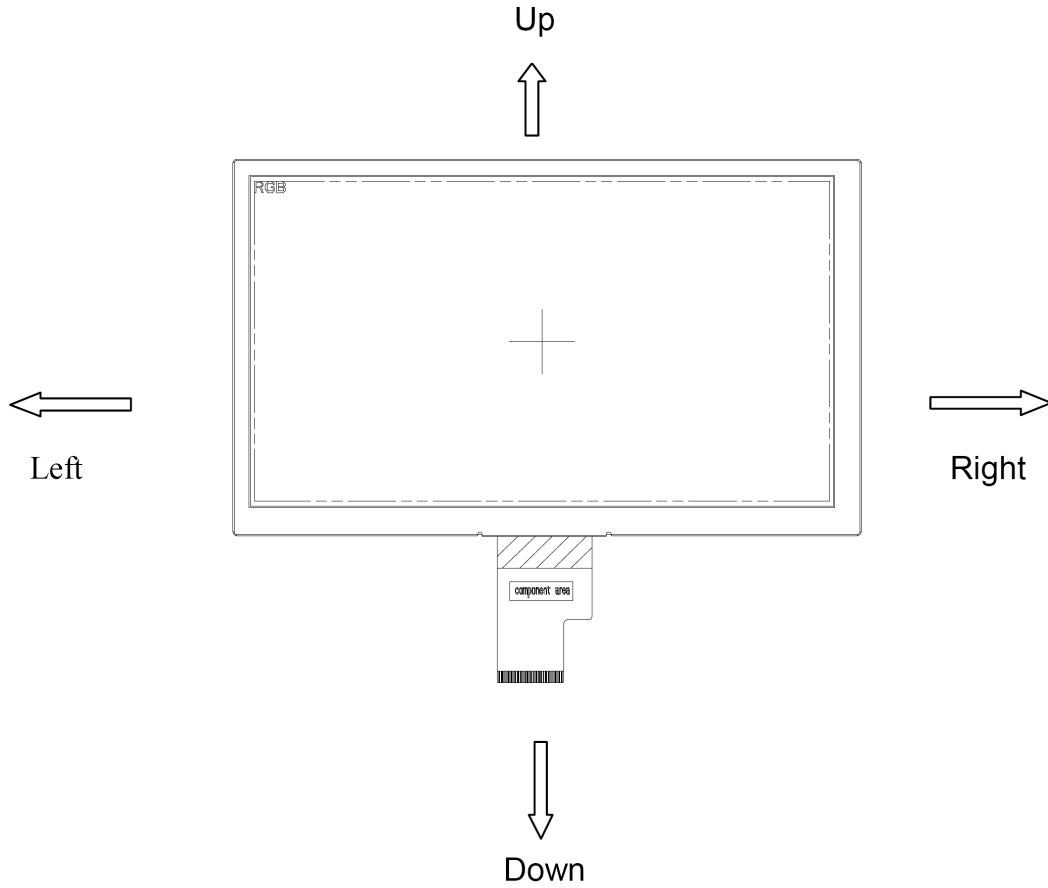


晶發科技股份有限公司 GI FAR TECHNOLOGY CO.,LTD.

No. 81, Dongfeng St, Shulin District, 23874, New Taipei City, Taiwan, R.O.C.



Note: Definition of scanning direction.
Refer to the figure as below:



FORGET



3. Operation Specifications

3.1. Absolute Maximum Ratings

(GND=AV_{SS}=0V, Note 1)

Item	Symbol	Values		Unit	Remark
		Min.	Max.		
Power voltage	V _{DD}	-0.3	5.0	V	
	AV _{DD}	6.5	13.5	V	
	V _{GH}	-0.3	42	V	
	V _{GL}	-20	0.3	V	
	V _{GH-V_{GL}}	-	40	V	
Operation Temperature	T _{OP}	-30	80	°C	
Storage Temperature	T _{ST}	-30	80	°C	
LED Reverse Voltage	V _R	-	5	V	Each LED
LED Forward Current	I _F	-	60	mA	Each LED

Note 1: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

Note 2: V_R Conditions: Zener Diode 60mA



3.1.1. Typical Operation Conditions

(GND=AV_{SS}=0V, Note 1)

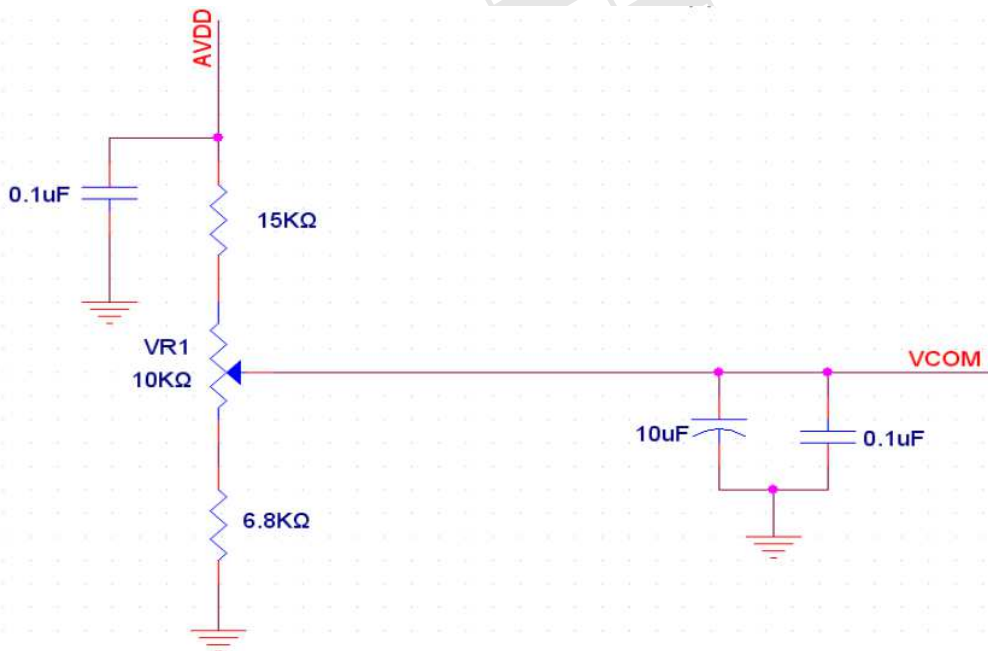
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	DV _{DD}	3.0	3.3	3.6	V	Note2
	AV _{DD}	10.8	11	11.2	V	
	V _{GH}	19.7	20	20.3	V	
	V _{GL}	-6.5	-6.8	-7.1	V	
Input signal voltage	V _{COM}	3.4	(3.7)	4	V	Note3
Input logic high voltage	V _{IH}	0.7 V _{CC}	-	V _{CC}	V	Note4
Input logic low voltage	V _{IL}	0	-	0.3 V _{CC}	V	

Note 1: Be sure to apply V_{CC} and V_{GL} to the LCD first, and then apply V_{GH}.

Note 2: V_{CC} setting should match the signals output voltage (refer to Note 3) of customer's system board.

Note 3: Typical V_{com} is only a reference value, it must be optimized according to each LCM. Please use VR and base on below application circuit.

Note 4: RESET, STBYB, SELB, L/R, U/D, CABEN0, CABEN1.





3.1.2. Current Consumption

(GND=AV_{SS}=0V)

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I _{GH}	-	0.3	1.0	mA	V _{GH} =20V
	I _{GL}	-	0.29	1.0	mA	V _{GL} = -6.8V
	IDV _{DD}	-	38	60.0	mA	V _{DD} =3.3V
	I _{AV} _{DD}	-	20.96	30.0	mA	AV _{DD} =11V

3.1.3. Backlight Driving Conditions

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED backlight	V _L	-	9.3	10.2	V	Note1
Current for LED backlight	I _L	-	360	362	mA	
LED life time	-	-	20,000	-	Hr	Note2

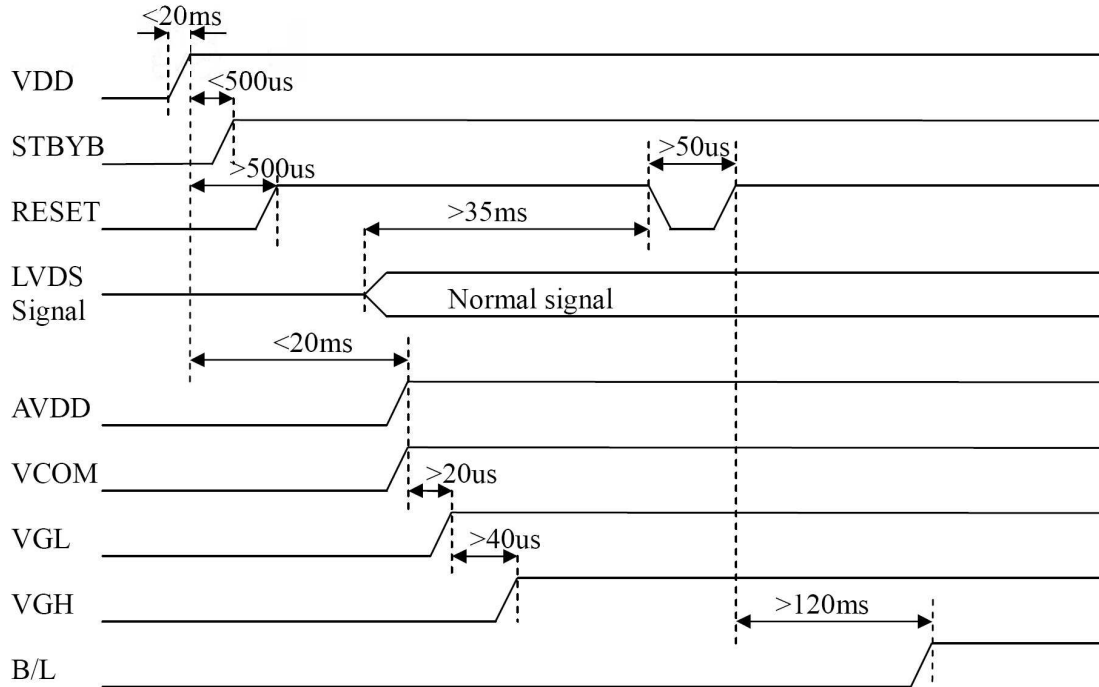
Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25°C and I_L =360mA.

Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25°C and I_L =360mA. The LED lifetime could be decreased if operating I_L is larger than 420mA.

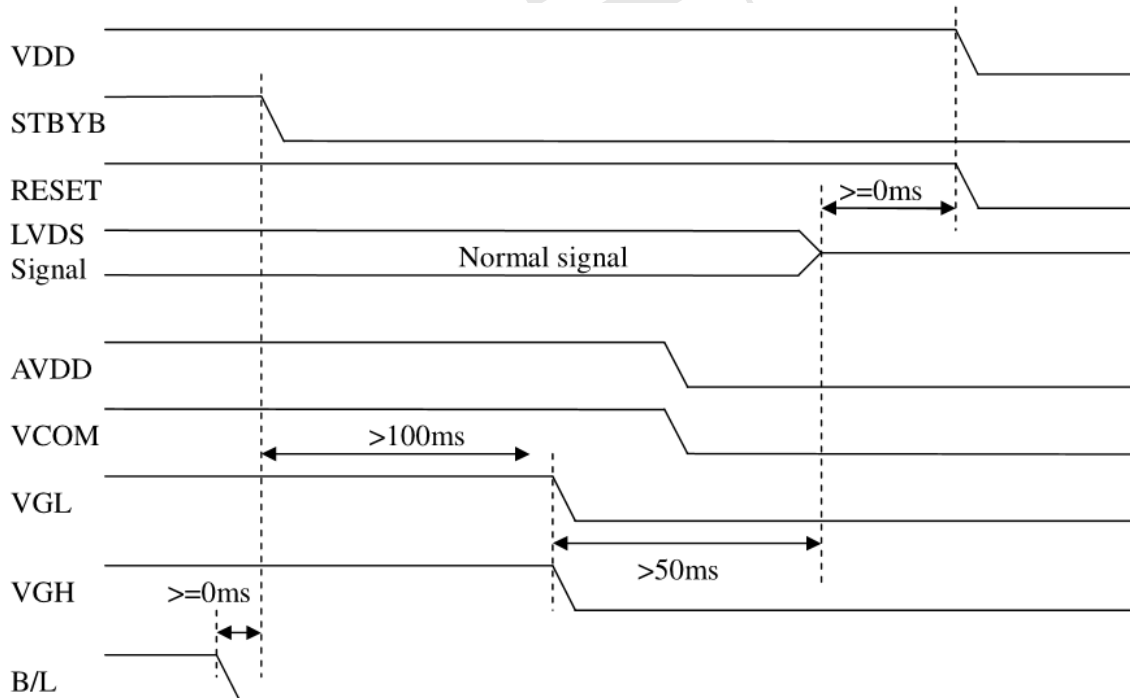


3.2. Power Sequence

a. Power on:



b. Power off:



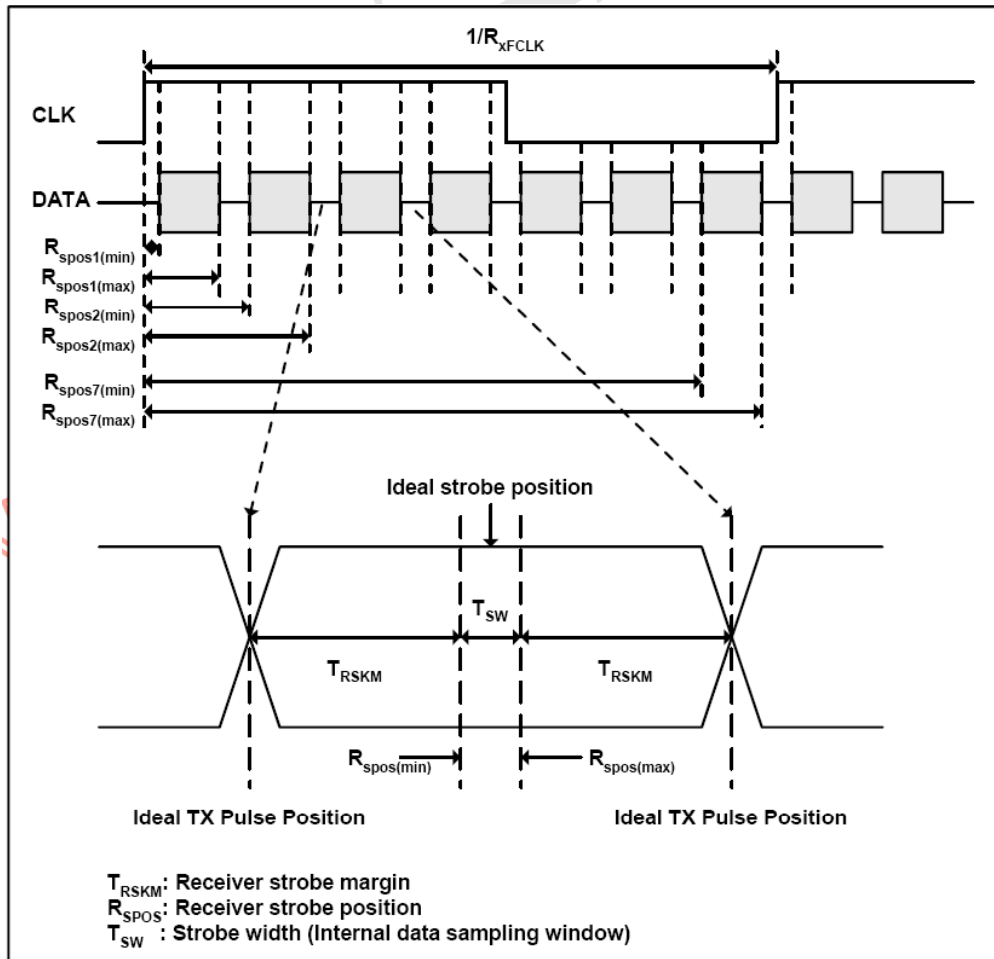
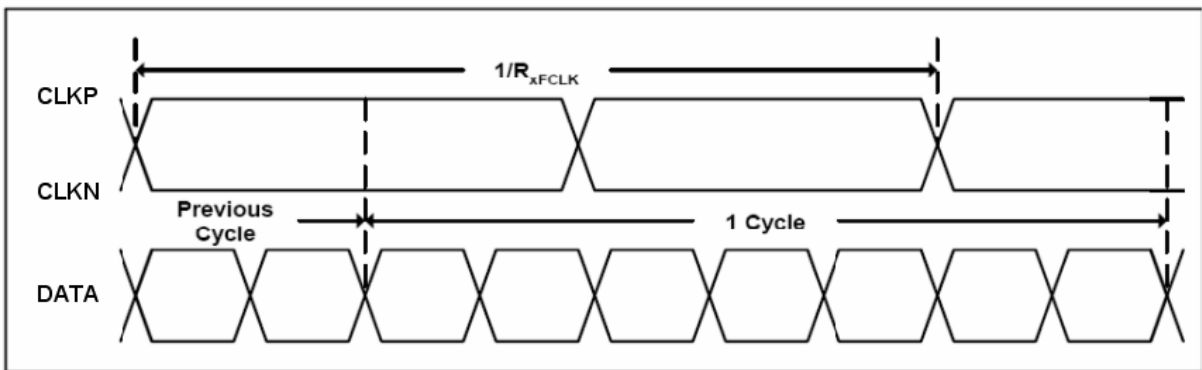


3.3. Timing Characteristics

3.3.1. AC Electrical Characteristics

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock frequency	R _{XFCLK}	20		71	MHz	
Input data skew margin	T _{RSKM}	500		-	ps	
Clock high time	T _{LVCH}	-	4/(7* R _{XFCLK})	-	ns	
Clock low time	T _{LVCL}	-	3/(7* R _{XFCLK})	-	ns	

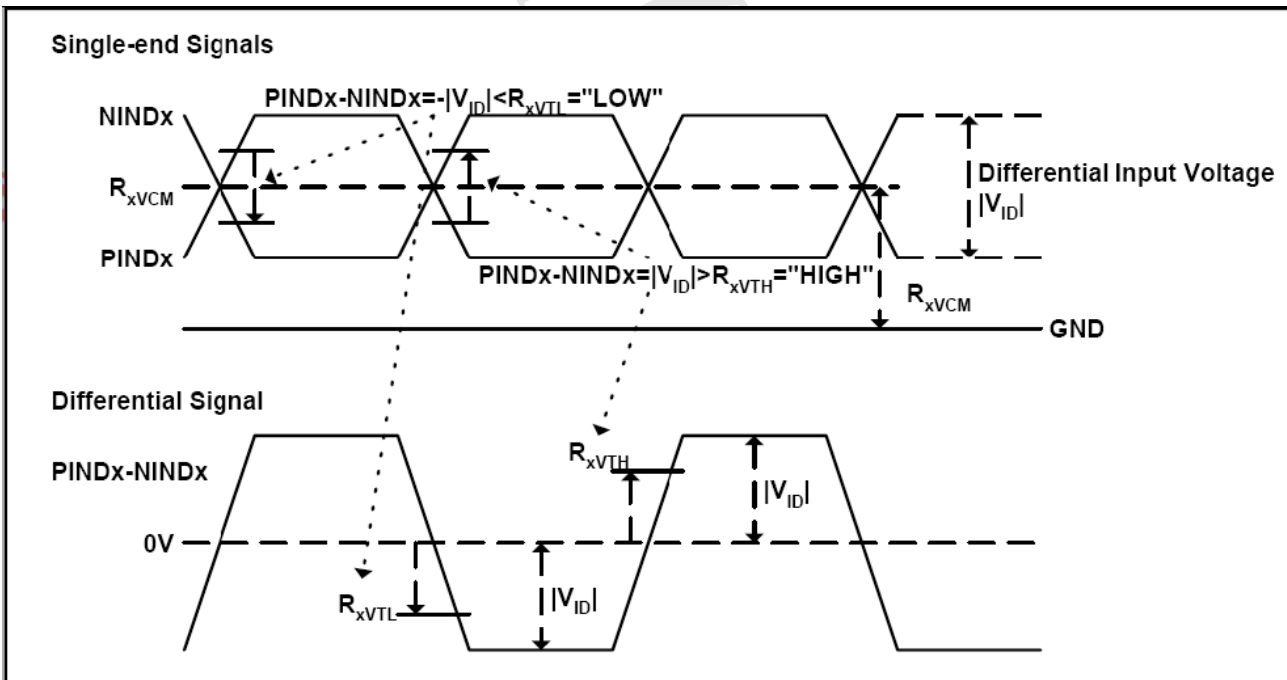
3.3.2. Input Clock and Data Timing Diagram





3.3.3. DC Electrical Characteristics

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Differential input high Threshold voltage	R_{xVTH}	-	-	+0.1	V	$R_{xVCM}=1.2V$
Differential input low Threshold voltage	R_{xVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{xVIN}	0	-	2.4	V	
Differential input common mode voltage	R_{xVCM}	$ V_{ID} /2$	-	$2.4- V_{ID} /2$	V	
Differential voltage	$ V_{ID} $	0.2	-	0.6	V	
Differential input leakage current	$R_{V_{xliz}}$	-10	-	+10	μA	



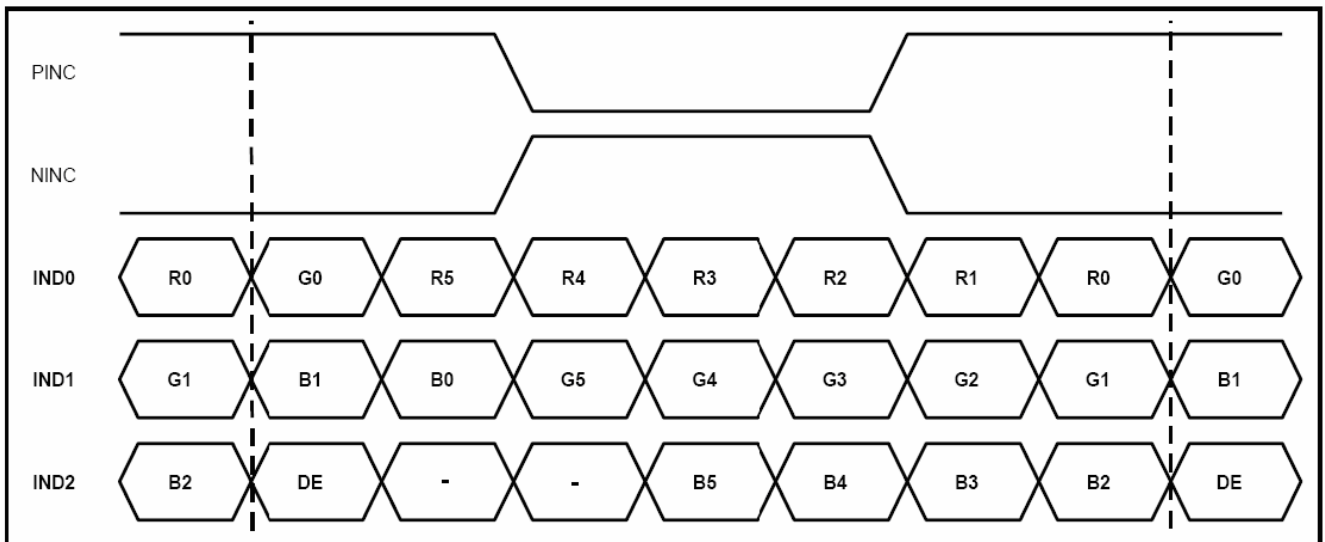


3.3.4. Timing

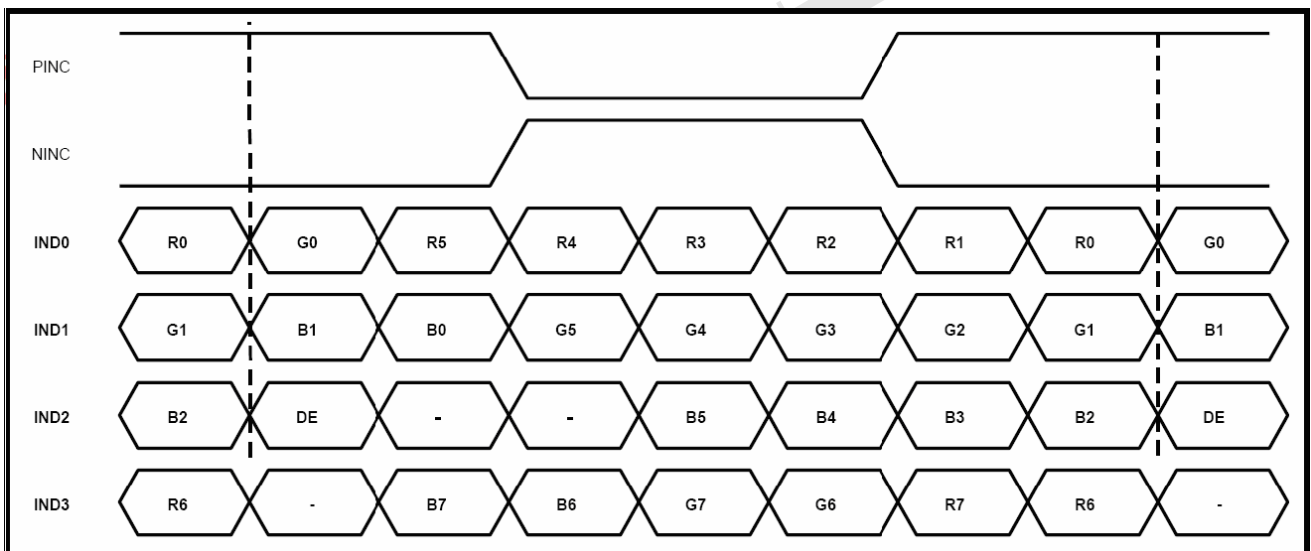
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	fclk	40.8	50.2	67.2	MHz	Frame rate =60Hz
Horizontal display area	thd	1024			DCLK	
HS period time	th	1114	1344	1400	DCLK	
HS Blanking	thb	90	320	376	DCLK	
Vertical display area	Thb+thfp	600			H	
VS period time	tv	610	635	800	H	
VS Blanking	Tvb+tvfp	10	35	200	H	

3.3.5. Data Input Format

6bit LVDS input



8bit LVDS input



Note: Support DE timing mode only, SYNC mode not supported.



4. Optical Specifications

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (CR≥ 10)	θ_L	$\Phi=180^\circ$ (9 o'clock)	65	75	-	degree	Note1
	θ_R	$\Phi=0^\circ$ (3 o'clock)	65	75	-		
	θ_T	$\Phi=90^\circ$ (12 o'clock)	60	70	-		
	θ_B	$\Phi=270^\circ$ (6 o'clock)	65	75	-		
Response time	T_{ON}	Normal $\theta=\Phi=0^\circ$	-	10	20	msec	Note3
	T_{OFF}		-	20	30	msec	Note3
Contrast ratio	CR		600	700	-	-	Note4
Color chromaticity	W_X		0.26	0.31	0.36	-	Note2
	W_Y		0.28	0.33	0.38	-	Note5
Luminance	L		400	500	-	cd/m ²	Note6
Luminance uniformity	Y_U		70	75	-	%	Note7

Test Conditions:

- $V_{CC}=3.3V$, $I_L=360mA$ (Backlight current), the ambient temperature is $25^\circ C$.
- The test systems refer to Note 2.



Note 1: Definition of viewing angle range

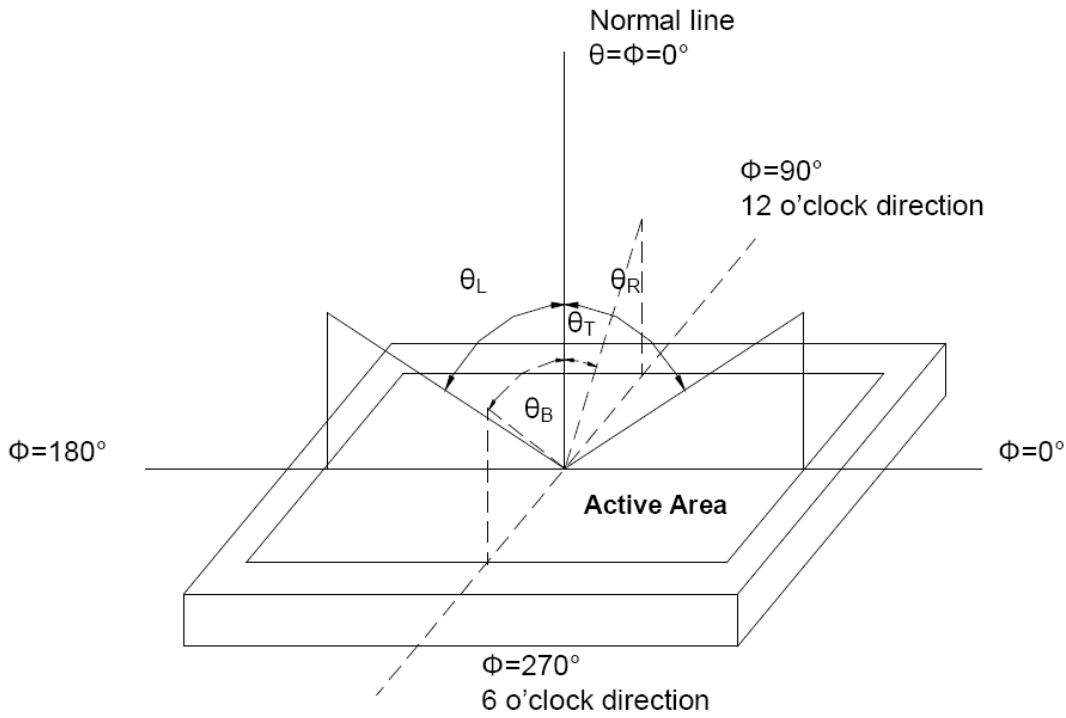


Fig. 4-1 Definition of viewing angle

Note 2: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 30 minutes operation, the optical properties are measured at the center point of the LCD screen. (Response time is measured by Photo detector TOPCON BM-7, other items are measured by BM-5A/Field of view: 1° /Height: 500mm.)

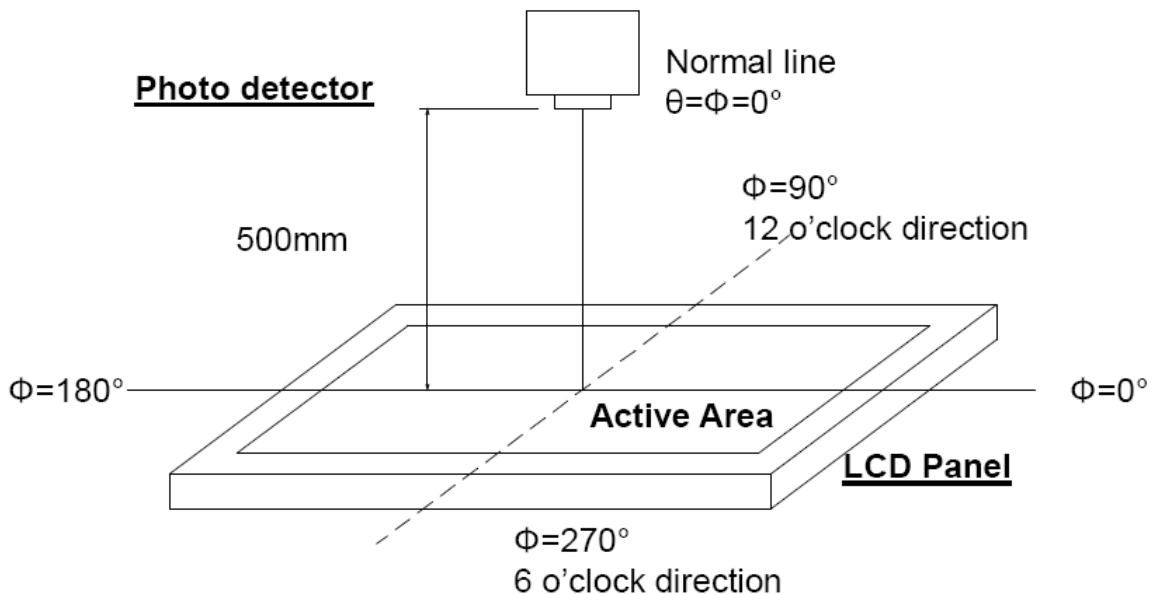


Fig. 4-2 Optical measurement system setup



Note 3: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.

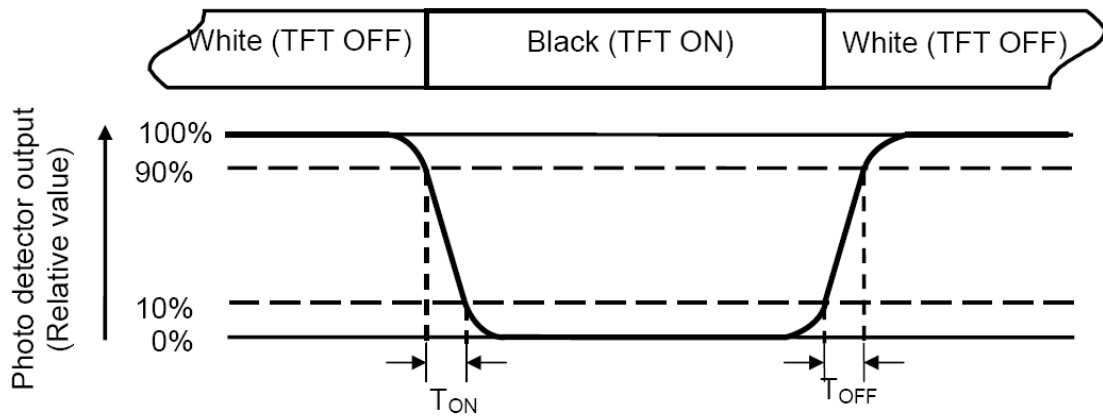


Fig. 4-3 Definition of response time

Note 4: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the " Black " state}}$$

Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

Note 6: Definition of luminance:

Measured at the center area of the panel when LCD panel is driven at “white” state.
The LED driving condition is $I_L=360\text{mA}$.



Note 7: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer to Fig. 4-4).Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity } (Yu) = \frac{B_{min}}{B_{max}}$$

L-----Active area length W----- Active area width

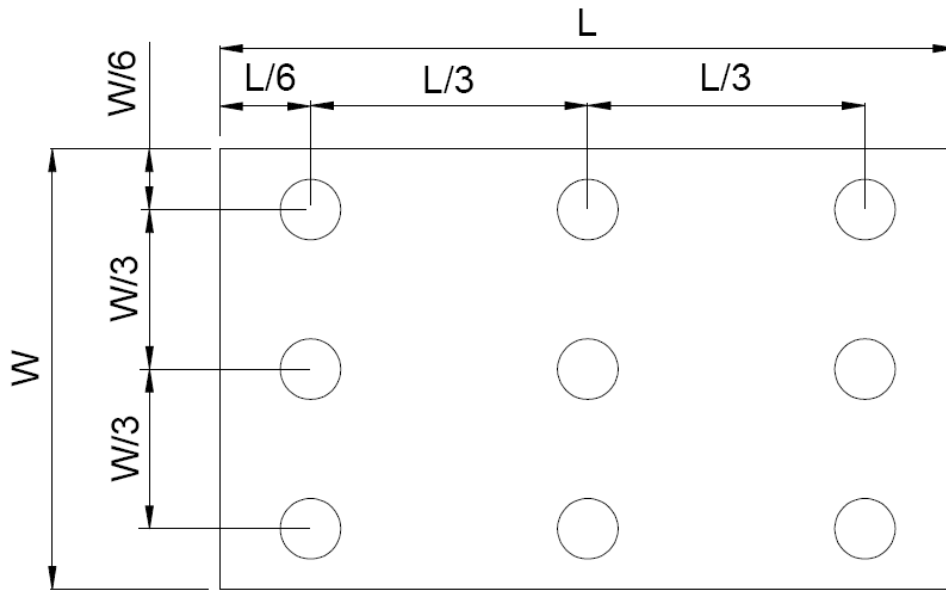


Fig. 4-4 Definition of measuring points

B_{max} : The measured maximum luminance of all measurement position.

B_{min} : The measured minimum luminance of all measurement position.



5. Reliability Test Items

(Note3)

Item	Test Conditions	Remark
High Temperature Storage	Ta = 80°C 240hrs	Note 1 , Note 4
Low Temperature Storage	Ta = -30°C 240hrs	Note 1 , Note 4
High Temperature Operation	Ts = 80°C 240hrs	Note 2 , Note 4
Low Temperature Operation	Ta = -30°C 240hrs	Note 1 , Note 4
Operate at High Temperature and Humidity	+40°C, 90%RH 240hrs	Note 4
Thermal Shock	-30°C 30min)→80°C 30 min for a total 100 cycles, start with cold temperature and end with high temperature	Note 4
Vibration Test	Frequency range:10~55Hz Stroke:1.5mm Sweep:10Hz~55Hz~10Hz 2 hours for each direction of X. Y. Z. (6 hours for total)	
Mechanical Shock	100G 6ms,±X, ±Y, ±Z 3 times for each direction	
Package Vibration Test	Random Vibration : 0.015G*G/Hz from 5-100HZ, -6dB/Octave from 100-200HZ 2 hours for each direction of X. Y. Z. (6 hours for total)	
Package Drop Test	Height:60 cm 1 corner, 3 edges, 6 surfaces	
Electro Static Discharge	± 2KV, Human Body Mode, 100pF/1500Ω	

Note 1: Ta is the ambient temperature of samples.

Note 2: Ts is the temperature of panel's surface.

Note 3: In the standard condition, there shall be no practical problem that may affect the display function.

After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

Note 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.



6. General Precautions

6.1. Safety

Liquid crystal is poisonous. Do not put it in your mouth. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

6.2. Handling

1. The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
2. The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.
3. To avoid contamination on the display surface, do not touch the module surface with bare hands.
4. Keep a space so that the LCD panels do not touch other components.
5. Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.
6. Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.
7. Do not leave module in direct sunlight to avoid malfunction of the ICs.

6.3. Static Electricity

1. Be sure to ground module before turning on power or operating module.
2. Do not apply voltage which exceeds the absolute maximum rating value.

6.4. Storage

1. Store the module in a dark room where must keep at $25\pm 10^{\circ}\text{C}$ and 65%RH or less.
2. Do not store the module in surroundings containing organic solvent or corrosive gas.
3. Store the module in an anti-electrostatic container or bag.

6.5. Cleaning

1. Do not wipe the polarizer with dry cloth. It might cause scratch.
2. Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.

6.6. Quality warranty period

Within one year after shipment date. (excluding abnormal usage way and abnormal environments.)



8. Package Drawing

8.1 Package Material Table

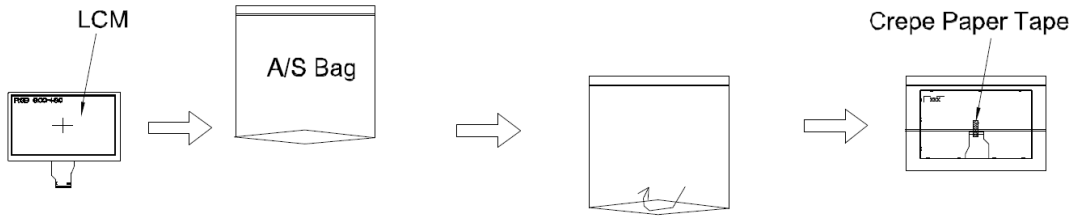
No.	Item	Model (Material)	Dimensions(mm)	Unit Weight (kg)	Quantity	Remark
1	LCM Module	GFTO080AA1024600-V	192.8X116.9X6.4	0.234	30pcs	1
2	Partition	BC Corrugated paper	512X349X226	1.67	1 set	2
3	Dust-Proof Bag	PE	700X530X0.05	0.060	1 pcs	3
4	A/S Bag	PE	213X182.0X0.2	0.0042	30 pcs	4
5	CrepePaper _Tape	四維CM35	30X10X0.13	0.001	30	5
6	Carton	Corrugated paper	525X362X250	0.95	1 pcs	6
7	Total weight	9.856 Kg ± 5%				

8.2 Packaging Quantity

Total LCM quantity in Carton: no. of Partition 2 Rows x quantity per Row 15 = 30 pcs



8.3 Packaging Drawing



1. Bend FPC and LED Light Bar wire to LCM backside.
2. Put LCM into A/S BAG .
3. Fix with crepe paper tape .

